

RECENT STUDIES OF MICE TRANSGENIC FOR PREPROSOMATOSTATIN (Smst). M. L. Oster-Granite, Ph.D., Division of Biomedical Sciences, University of California, Riverside, CA 92521-0121.

Transgenic mice have been developed which contain extra copies of the mouse preprosomatostatin (Smst) gene (TgmSmst). We have studied three such lines 13, 16, and 42, and have determined that these lines exhibit variable expression of somatostatin in their tissues and in various regions of the central nervous system. Growth rates and final adult size are also variable in these transgenic lines and reflect in part the degree of overexpression and increased peptide concentration in the various transgenic lines. There appears to be a sexual dimorphism in growth characteristics with two of these lines, line 13 and line 42, although the males in line 13 are considerably smaller than non-transgenic control mice and the males in line 42 somewhat larger than non-transgenic control mice.

These lines help to confirm the dynamic interaction that had been postulated to occur between the basal forebrain cholinergic system and cortical somatostatin during early development, since cholinergic alterations are present and exhibit sexual dimorphism in at least one of these lines (line 13). Concentrations of cholinergic markers vary in a sex specific manner in these lines of transgenic mice.

Variations in behavior and cholinergic concentrations that have been observed may arise from alterations in the location and distribution of somatostatin receptors in various regions of the brains of these transgenic mice. Recent and continuing studies illustrate that several of the classes of somatostatin receptors are altered in various brain regions in these lines of somatostatin transgenic mice. Current studies seek to establish the earliest times in development when these alterations in somatostatin receptors can be detected.